

Unit Planning Guide: Grade 4 Unit 2 of 8

Unit Title: Multiplication Problem Solving	Pacing (Duration of Unit): 5 weeks
Grade: 4	Buffer Day(s):

Desired Results

Transfer Goals

Students will be able to independently use their learning to:

- MP.1. Make sense of problems and persevere in solving them.**
- MP.2. Reason abstractly and quantitatively.**
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.**
- MP.6. Attend to precision.**
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Established Goals (2011 MA Curriculum Frameworks Standards Incorporating the Common Core State Standards)

Standards (Priority Standards in bold):

- **4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.**
- **4.NBT.MA.5a** Know multiplication facts and related division facts through 12×12 .
- **4.OA.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.**
- **4.OA.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing**

WIDA for English Language Learners

Standard 1: ELLs **communicate** for **Social** and **Instructional** purposes within the school setting

Standard 3: ELLs **communicate** information, ideas and concepts necessary for academic success in the content area of **Mathematics**

In the lesson planning stage, teachers will need to differentiate lessons for ELLs. In order to accomplish this they will need:

- 1.) this curriculum map, 2.) a list of their ELLs and their proficiency levels, and 3.) appropriate language function

<p>multiplicative comparison from additive comparison.</p> <ul style="list-style-type: none"> • 4.OA.3 Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. • 4.OA.4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite. • 4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. <i>For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.</i> • 4.MD.3 (ADDITIONAL) Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. <i>For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor. **At this point area is reintroduced as an application of multiplication. It will be revisited in a later unit to be covered in more depth.</i> • 4.NBT.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. <i>For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.</i> 	<p>expectations and scaffolds or supports.</p>
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<p>Meaning (*Mostly assessed through Performance Tasks/Assessments)</p>
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<p>Big Ideas: (Statements and concepts written in teacher friendly language which reflect the important [but not obvious] generalizations we want students to be able to arrive at. These are used by the teacher to focus daily instruction.)</p> <ul style="list-style-type: none"> • Multiples of numbers generate patterns • Factors generate products • Every number has an infinite number of multiples • Knowledge of place value is necessary to accurately multiply multi-digit numbers • Multiplication is repeated addition 	<p>Essential Questions: (Questions which frame ongoing and important inquiries about the big ideas. They are written for students and used in daily instruction to help engage students in meaningful thinking.)</p> <ul style="list-style-type: none"> • Why should I multiply? • What questions can be answered using multiplication • How many different methods of multiplying can I use. • What is the best method for multiplying?
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Acquisition (*Mostly assessed through traditional summative assessments)	
<p>Knowledge: Key basic concepts, facts, and key terms (written in phrases) students should be able to recall independently.</p> <p><i>Students will know ...</i></p> <ul style="list-style-type: none"> • strategies for multiplying multi-digit whole numbers (4 digits by 1 digit, 2 digits by 2 digits) • an equation is a comparison. • a whole number is a multiple of each of its factors. • the formula for area involves multiplication. <p>Key Academic Vocabulary:</p> <ul style="list-style-type: none"> • Variable • Prime • Composite • Factor • Multiple 	<p>Skills: The discrete skills and process students should be able to use independently (<u>Bloom's Level of Learning should be noted in parentheses.</u>)</p> <p><i>Students will be skilled at:</i></p> <ul style="list-style-type: none"> • calculating and explaining methods for multiplication using multiple strategies. (analyzing) • multiplying facts up to 12 by 12 fluently. (remembering) • generating and solving equations with an unknown number represented by a symbol. (applying) • solving multi-step word problems using multiplication equations with a variable to represent an unknown quantity and assess reasonableness of the answer using estimation and mental computation. (applying) • finding all factor pairs for a whole number in the range 1-100 and determine if it is prime or composite. (analyzing)